

## **DETAILED ACTION**

### ***Status of the Claims***

1. **Claims 14-21 and 23-28** are currently pending.

### ***Response to Amendment***

2. Examiner acknowledges the request for continued examination (RCE) filed on 08/19/2009.
3. Examiner acknowledges the amendments to claims 23 and 27 and thus Examiner withdraws the 112 2nd paragraph rejections of claims 23 and 27.

### ***Response to Arguments***

4. The remarks and arguments filed on 06/30/2009 have been fully considered and were addressed in the advisory action mailed 07/30/2009.
5. Furthermore, Examiner notes the amendment made to claim 14. However, Examiner believes that the combination of Dungan in view of Acevedo still applies to claim 14 and thus the amended claim has been rejected below. See below for the discussion of the rejection of claim 14.

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***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. **Claims 14, 15, 17, 23, 24, and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2001/0040509 (Dungan) in view of US Patent Application Publication No. 2001/0038336 (Acevedo).

Regarding claims 14 and 15, Dungan teaches an apparatus and method for wireless gas monitoring comprising a sensor module and a master station.

- The sensor module comprising:
  - a first housing including a gas sensor (Fig. 7; Paragraphs [0090] and [0091]);

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- sensor module contains means to convert an analog output signal corresponding to the concentration of the selected gas in the atmosphere adjacent to the sensor to a digital signal that is transmitted by radio transmission to a master station (Abstract; Paragraphs [0112] and [0113]).
- The master station comprises:
  - A second housing (60; Paragraph [0078]);
  - A wireless receiver for receiving radio transmissions from a sensor module (Abstract; Paragraph [0078]); and
  - A Display for displaying the concentration of gas (70; Paragraphs [0078] and [0115]).

Furthermore, Dungan teaches that the first and second housings are electrically isolated from one another (Fig. 3).

Dungan further teaches that the sensor module is arranged to transmit data at set time periods even when a detected concentration is not exceeded (*the sensor module is arranged to transmit standard data signals to the display module when a gas concentration is detected below a threshold level*) ([0027] and [0030]), and also teaches to transmit data when a concentration is exceeded (*and to transmit a broadcast signal to the display module when a gas concentration is exceeded*) ([0027] and [0028]).

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Dungan does not expressly teach that the first and second housings are connectable releasably together. However, Examiner considers that one of ordinary skill in the art at the time the invention was made would consider these two housings able to be releasably connected to one another with means well known in the art, such as with Velcro or string.

Dungan does not expressly teach that the apparatus can be operated with the display module and the sensor module connected together or physically separated. However, Examiner considers that since these two are able to be releasably connected together with means well known in the art, as described above, that they could be operated either connected together or physically separated. Furthermore, Examiner notes that whether the display module and the sensor module are connected together or physically separated has no effect on the operability of the apparatus.

Even though Dungan teaches transmitting to multiple master controllers ([0002]) and teaches transmitting data when a threshold is exceeded, Dungan does not explicitly teach transmitting a broadcast signal to a plurality of other display modules which are identical to the display module, when a gas concentration is detected exceeding the threshold level.

Acevedo teaches a wireless smoke detection system wherein when a sensor detects a threshold is exceeded, it transmits a plurality of signals to a plurality of identical receiver

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units to warn everyone through a monitored area (Abstract; Fig. 3). Acevedo does not teach display units, but it would have been obvious to combine this feature with the display feature as taught in Dungan and utilize a plurality of identical display units, to receive the messages when a threshold is exceeded so that persons in the monitored area can be notified quickly and efficiently. Furthermore, by keeping the display units identical, it simplifies the system so that the system is easy and cost effective to manufacture and maintain.

Regarding claim 17, Dungan further discloses that sensor module stations are battery powered (Paragraph [0065]; Fig. 8). Dungan discloses that the master station has power means, but does not explicitly disclose battery means (62; Paragraph [0078]). However, one of ordinary skill in the art at the time the invention was made would believe it obvious to utilize battery means in the master station so that the master station could have its own independent power means, thus making it portable as well.

Regarding claim 23, see above rejection for claim 14.

Regarding claim 24, Dungan further discloses that the predetermined condition can be varied by actuating a data entry apparatus to change the data stored (Paragraph [0026]).

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Regarding claim 25, Dungan further discloses that the sensor module transmitter is controlled to transmit in licensed radio frequencies to provide longer distance capability (Paragraph [0067]). Examiner considers this to mean that the sensor module controls the communication protocol between itself and other modules.

9. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2001/0040509 (Dungan) as modified by US Patent Application Publication No. 2001/0038336 (Acevedo) and further in view of US Patent No. 6,031,454 (Lovejoy et al.).

Regarding claim 16, Dungan and Acevedo teach the system of claim 15 as discussed above. Dungan does not expressly teach the transmitter and receiver employ spread spectrum techniques.

Lovejoy teaches a monitor that transmits to a central computer utilizing spread-spectrum radio signals (Column 5, lines 35-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a well known technique, such as spread-spectrum, for a variety of reasons, including establishment of secure communications, resistance to natural interference and jamming, and to prevent detection.

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10. **Claims 18 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2001/0040509 (Dungan) as modified by US Patent Application Publication No. 2001/0038336 (Acevedo) and further in view of US Patent No. 5,814,968 (Lovegreen et al.).

Regarding claims 18 and 19, Dungan and Acevedo teach the system of claim 17 as discussed above. Dungan does not expressly teach wherein the batteries are rechargeable, at least the first housing being provided with terminals receivable in a charger to charge the battery or batteries in both housings.

Lovegreen teaches a battery charger for a rechargeable paging system wherein a plurality of rechargeable electronic devices can be electrically connected for recharging to a battery charger base unit simultaneously by stacking the electronic devices on each other to establish an electrical connection through each device to the battery charger base unit (Column 5, lines 9-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize this charging system as disclosed in Lovegreen with the invention of Dungan combined with Acevedo so as to connect the sensing unit to the base unit when it needs recharged, thus recharging the batteries simultaneously together, and thus saving time by not having to recharge them separately.

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11. **Claims 20 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2001/0040509 (Dungan) as modified by US Patent Application Publication No. 2001/0038336 (Acevedo) and US Patent No. 5,814,968 (Lovegreen et al.) and further in view of US Patent No. 6,310,960 (Saaski et al.).

Regarding claims 20 and 21, Dungan, Acevedo, and Lovegreen teach the system of claim 19 as discussed above. Dungan does not explicitly teach energy transfer means are provided on the respective housings to transfer sufficient energy from the first housing to the second housing to charge the battery or batteries in the second housing, without requiring electrical contact between the housings. Nor does Dungan teach a light source is provided in the first housing, arranged to be activated when the first housing is receiving in a charger, and a photovoltaic cell is provided on the second housing, the light source and the photovoltaic cell being located adjacent on another when the two housings are connected.

Saaski teaches a rechargeable hearing aid system wherein an optical charger may comprise a light source and the hearing aid comprising a photovoltaic cell for converting the light received into electrical energy for recharging the hearing aid's rechargeable battery (Column 3, lines 35-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine this feature with the invention of Dungan, Acevedo, and Lovegreen so that when the first housing is plugged into a charger, a light source is activated in the first housing to charge the second housing



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with the photovoltaic cell. This way, by providing a non-contact charging system, you have the advantage of a system that cannot be hindered by a bad electrical contact.

12. **Claim 26** is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2001/0040509 (Dungan) as modified by US Patent Application Publication No. 2001/0038336 (Acevedo) and further in view of US Patent No. 6,891,476 (Kitaguchi et al.).

Regarding claim 26, Dungan and Acevedo teach the system of claim 14 as discussed above. Dungan does not expressly teach the display module transmits the signals indicative of the measured gas concentration to at least one reader.

Kitaguchi teaches a radiation meter wherein a central system processes the data and transmits it to a portable electronic device carried by the user for the user to be able to read the data (Claim 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine this feature with the system of Dungan combined with Acevedo so that individuals could carry around reader devices and read the sensor data without having to be at the master station.

13. **Claim 27** is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2001/0040509 (Dungan) as modified by US Patent

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Application Publication No. 2001/0038336 (Acevedo) and further in view of US Patent No. 6,961,584 (Leedom, Jr.).

Regarding claim 27, Dungan and Acevedo teach the system of claim 14 as discussed above. Furthermore, Dungan does not expressly teach the broadcast signal has a greater signal strength than a standard data signal.

Leedom, Jr. teaches a system wherein different broadcast strengths can be utilized depending on the desired broadcast area (see claim 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the broadcast signal to have a greater strength than the standard data signal because the broadcast signal may need to transmit over a potentially larger area in order to reach other display modules.

14. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2001/0040509 (Dungan) as modified by US Patent Application Publication No. 2001/0038336 (Acevedo) and further in view of US Patent No. 5,579,124 (Aijala et al.).

Regarding claim 28, Dungan and Acevedo teach the system of claim 14 as discussed above. Dungan does not expressly teach the broadcast signal is encoded with data identifying it as a broadcast message.

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Aijala teaches a system wherein a broadcast signal can contain within information identifying the source of the encoded broadcast signal (see claim 84). Thus, by encoding the source of the broadcast signal, this is encoding information that the signal is a broadcast signal. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Dungan combined with Acevedo so that the broadcast signal was encoded with data identifying it as a broadcast signal, such as the source of the broadcast signal. Furthermore, this allows the receiver to determine where the broadcast originated from, thus giving them more useful information, which can help them determine where the concentration of gas was exceeded.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KERRI MCNALLY whose telephone number is (571)270-1840. The examiner can normally be reached on Monday - Thursday 9 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ben Lee can be reached on 571-272-2963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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